



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/708,420

03/02/2004

Mark O. Scates

10437.0073.NPUS01

2419

23369

7590

06/09/2006

HOWREY LLP

C/O IP DOCKETING DEPARTMENT

2941 FAIRVIEW PARK DRIVE, SUITE 200

FALLS CHURCH, VA 22042-7195

EXAMINER

VALENROD, YEVGENY

ART UNIT

PAPER NUMBER

1621

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/708,420	<b>Applicant(s)</b> SCATES ET AL.	
	<b>Examiner</b> Yevgeny Valenrod	<b>Art Unit</b> 1621	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-411 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/2/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7-15-2004</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Rejection 35 USC 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16, 26 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "effective" in claims 16, 26, and 31 is a relative term, which renders the claim indefinite. The term "effective" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The claims pertain to amount of dimethyl ether effective to reduce the solubility of methyl iodide in aqueous extract streams. The quantitative value of the said effective amount is not provided in the claims or the spec. It is unclear to a person of ordinary skill in the art whether any amount or a specific amount of dimethyl ether is required. Claims 16, 26 and 31 are therefore indefinite and are rejected under 35 USC 112, 2<sup>nd</sup> paragraph.

For the purpose of advancing the prosecution the Examiner will interpret "effective amount" to mean any amount of dimethyl ether. Therefore, any amount of dimethyl ether in the second overhead will reduce the solubility of methyl iodide in at least one aqueous extract stream.

***Rejection 35 USC 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-8, 10-12, 14-20, 22-26, 27, 29-31, 33-37, 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Singh et al. (US 6,143,930) in view of Allison (Organic Chemistry Laboratory II, Chemistry 3712/3612, spring 2003 Edition, department of Chemistry and Biochemistry University of Arkansas, pages 1-35)

The instant application claims a method of removal of permanganate reducing compounds (PRC) from methanol carbonylation process stream. Limitations recited in the claims include: multiple extractions, removal of acetaldehyde and a step of forming dimethyl ether in the last distillation column.

***Scope of prior art***

Singh et al teach a method of removing permanganate reducing compounds from a carbonylation process stream. In their process, acetaldehyde and other PRCs are removed from the process stream (column 11, lines 46-48 for acetaldehyde). Singh et al. also teach subjecting the process stream from the top of the last distillation column to a condensation followed by an extraction (column 11, line 45).

*Ascertaining the difference between prior art and the instant claims*

Singh et al teach directing the iodide rich stream to the extractor for further purification. However, they do not specifically mention performing two consecutive extraction steps as applicant claims in independent claims 1, 17 and 30. They also do not teach forming dimethyl ether in the last distillation column.

*Secondary reference*

Allison teaches that multiple extractions give more product or purer product or both, when compared to a single extraction (see middle of page 28).

*Obviousness*

A person of ordinary skill in the art wishing to improve the separation of methyl iodide from acetaldehyde would be motivated to repeat the extraction taught by Singh et al. Extracting multiple times is very common in the art, as shown by Allison, and the person attempting to do so would have a reasonable expectation of succeeding in improving the separation by performing additional extractions.

According to the applicant dimethyl ether is formed when water is added to the distillation column (page 33 lines 10-11 of the specification). Singh et al. teach that water is already present in the said distillation (column 9 lines 48-50) therefore one of ordinary skill in the art would expect dimethyl ether to be formed in the process described by Singh et al and the said process would provide dimethyl ether to the second overhead and subsequently to the extractors, thereby increasing the amount of methyl iodide removed from the aqueous streams.

### ***Provisional Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-41 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-36 of copending Application No. 10/708,421 in view of Neil T Allison (Organic Chemistry Laboratory II, Chemistry 3712/3612, spring 2003 Edition, University of Arkansas, pages 1-35). Although the conflicting claims are not identical, they are not patentably distinct from each other because they teach the main invention of the instant application. The specific limitations of the dependant claims of the instant application are found in the dependent claims of Application No. 10/708,421.

The instant application claims a process for removal of permanganate reducing compounds from methanol carbonylation process. The said process comprising subjecting the stream from the second overhead to multiple extractions and optionally returning at least a portion of the extract to the second distiller. Further limitations of dependent claims include: Method where PRC comprises acetaldehyde (claim 2), method of the claim 1 where acetaldehyde is removed from volatile phase (claim 4), adding dimethyl ether to the stream (claim 13), forming dimethyl ether in the distillation step (14), process where the distillation comprises at least two distillation steps (claim 15), process where first overhead comprises dimethyl ether (Claim 12).

Application # 10/708,421 claims a process for removal of permanganate reducing compounds from methanol carbonylation process. The process in this application comprises extracting the second overhead and returning at least a portion of the extracted second overhead to the second distiller. Additional limitations, as mentioned



in the previous paragraph, are also claimed in the Application # 10/708,421. (claims 2-13)

Application # 10/708,421 does not claim using multiple extractors in the described process.

Allison teaches that multiple extractions give more product or purer product or both, when compared to a single extraction (see middle of page 28).

A person of ordinary skill in the art wishing to improve the separation of methyl iodide from acetaldehyde would be motivated to repeat the extraction. Extracting multiple times is very common in the art, as shown by Allison, and the person attempting to do so would have a reasonable expectation of succeeding in improving the separation by performing additional extractions. (Neil T Allison "Organic Chemistry Laboratory II, Chemistry 3712/3612, spring 2003 Edition, department of Chemistry and Biochemistry University of Arkansas, middle of page 28. Reference can be found online at: <http://www.uark.edu/campus-resources/allison/OC2MajorsLab/2003SpringSupplement.pdf>)

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### **Conclusion**


- Claims 1-41 are pending in the application
- Claims 1-41 are rejected.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yevgeny Valenrod whose telephone number is 571-272-9049. The examiner can normally be reached on 8:30am-5:00pm M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



---

Yevgeny Valenrod  
Patent Examiner  
Technology Center 1600



PAULA A. ZUCKER, PH.D.  
PRIMARY EXAMINER  
Tech Center 1600

---

Thurman Page  
Supervisory Patent Examiner  
Technology Center 1600